NCT Technology

13 100kHz Bandwidth of Frequency Band Edge Requirement

13.1 Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (d)	
Test Limit	in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a).	

13.2 Test Setup

EUT	 Spectrum Analyzer	

13.3 Test Procedure

The EUT must have its hopping/Non-hopping function enabled. Using the following spectrum analyzer setting:

- 1. Set the RBW = 100kHz.
- 2. Set the VBW = 300kHz.
- 3. Sweep time = auto couple.
- 4. Detector function = peak.
- 5. Trace mode = max hold.
- 6. Allow trace to fully stabilize.

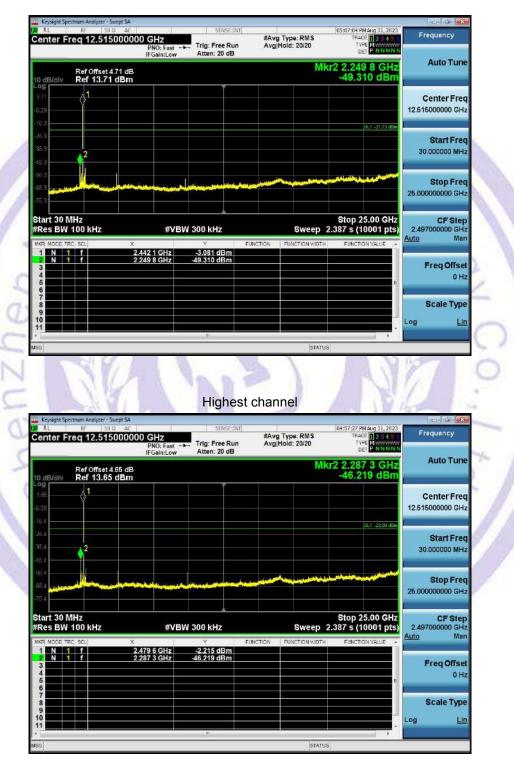


13.4 Test Data

Left earphone

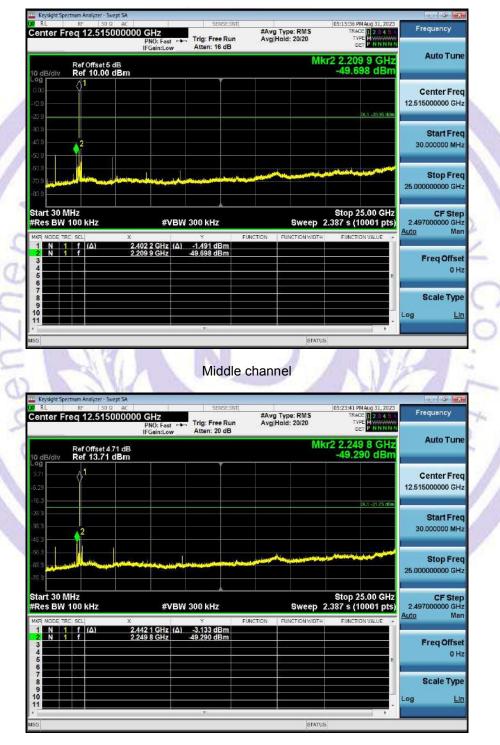
GFSK mode:





Middle channel

π /4-DQPSK mode:

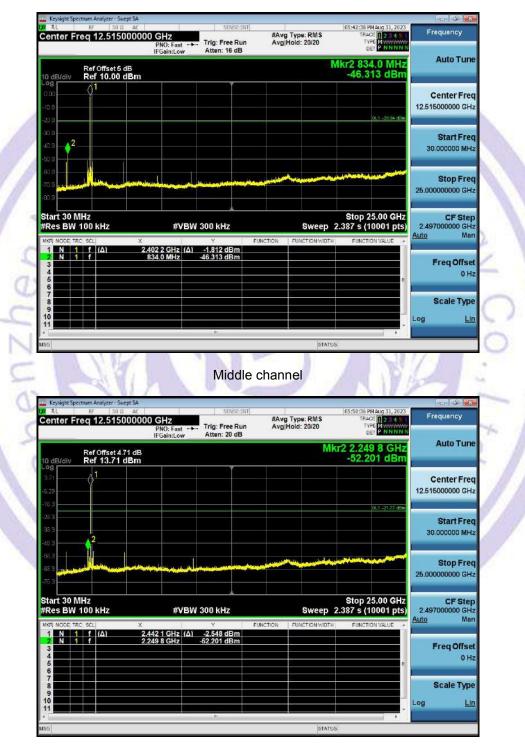


Lowest channel



Highest channel

8-DPSK mode:



Lowest channel



Highest channel

Ke #Avg Type: RMS Avg|Hold: 20/20 Center Freq 2.357500000 GHz PRO: Fast Frequency Trig: Free Run Atten: 20 dB Auto Tune Mkr3 2.399 965 GHz -51.491 dBm Ref Offset 5 dB Ref 14.00 dBm Center Freq 2.357500000 GHz Start Freq 2.31000000 GHz Stop Freq 2.405000000 GHz Stop 2.40500 GHz Sweep 9.133 ms (1001 pts) Start 2.31000 GHz #Res BW 100 kHz CF Step #VBW 300 kHz 9.5 00000 MI-Ma Auto -0.946 dBm -51.491 dBm -51.491 dBm Freq Offset 0 Hz Scale Type .og Lin GFSK Hopping Band edge-left side Key BI Center Freq 2.357500000 GHz Frequency #Avg Type: RMS Avg Hold: 10/10 Trig: Free Run Atten: 20 dB Auto Tune Mkr3 2.399 870 GHz -56.375 dBm Ref Offset 5 dB Ref 14.00 dBm **Center Freq** 2.357500000 GHz Start Fred 2.310000000 GHz www.weekallooranga.adwpapa.au.bliv/hav/aner/waehav/panananowwww.au.au.au.au.au.au. Stop Freq 2.40500000 GH Start 2.31000 GHz #Res BW 100 kHz Stop 2.40500 GHz Sweep 9.133 ms (1001 pts) CF Step 9.500000 MHz #VBW 300 kHz Auto Ma -1.010 dBr -56.738 dBr -56.375 dBr 2.400 000 G Freq Offset 0 Hz Scale Type .og Lin

GFSK No-hopping Band edge-left side

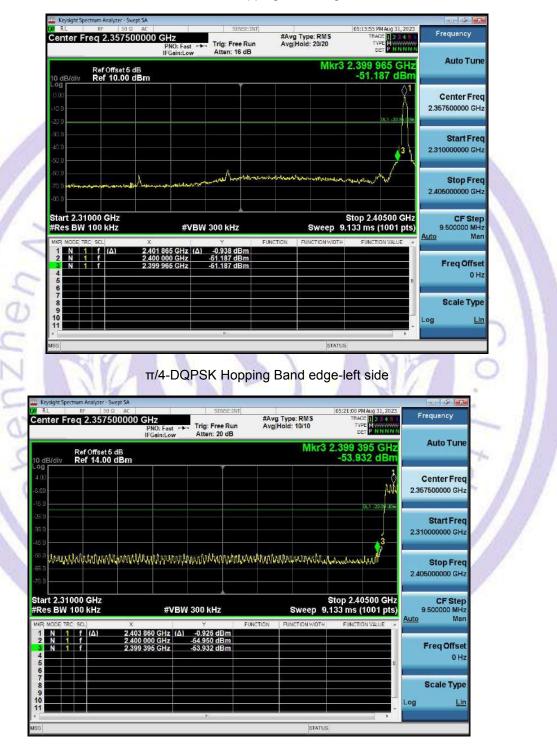
Report No.: NCT23035006E

enzhe,



Ke Frequency #Avg Type: RMS Avg Hold: 20/20 Auto Tune Mkr3 2.499 375 GH: -61.081 dBn Ref Offset 4.65 dB Ref 13.65 dBm Center Freq 2.487500000 GHz Start Freq 2.475000000 GHz A2 Stop Freq 2.50000000 GHz Stop 2.50000 GHz Sweep 2.400 ms (1001 pts) Start 2.47500 GHz #Res BW 100 kHz CF Step 2.500000 MHz #VBW 300 kHz Mar Auto 2.479 875 GHz 2.483 500 GHz 2.499 375 GHz -2.053 dBm 62.647 dBm 61.081 dBm Freq Offset 0 Hz Scale Type .og GFSK Hopping Band edge-right side PM Aug 31, 2023 Center Freq 2.487500000 GHz PNO: Fast Frequency #Avg Type: RMS Avg Hold: 10/10 1234 Trig: Free Run Atten: 16 dB PNNNN Auto Tune Mkr3 2.497 900 GHz -54.824 dBm Ref Offset 4.65 dB Ref 9.65 dBm **Center Freq** 2.487500000 GHz Start Freq 2.475000000 GHz 502m Mul Stop Freq 2.50000000 GHz Start 2.47500 GHz #Res BW 100 kHz Stop 2.50000 GHz Sweep 2.400 ms (1001 pts) CF Step 2.500000 MHz #VBW 300 kHz Auto Ma -2.098 dB 64.246 dB 54.824 dB 2.476 2.483 2.497 Freq Offset 0 Hz Scale Type .og Lin

GFSK No-hopping Band edge-right side



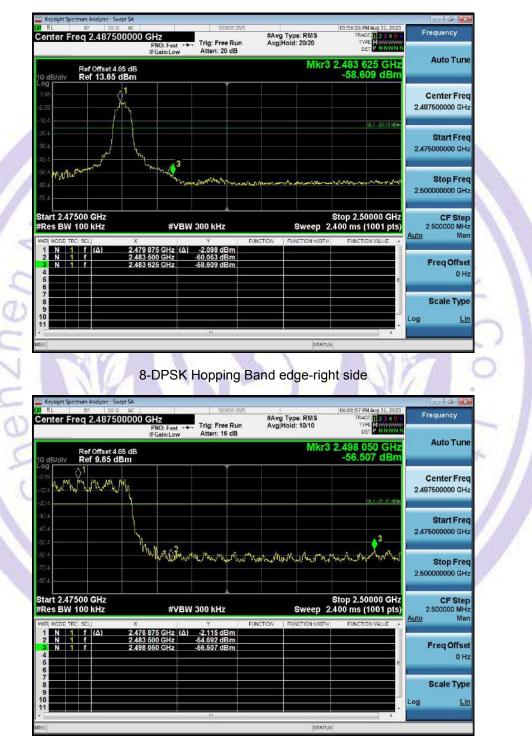
 π /4-DQPSK No-hopping Band edge-left side

Ke Center Freq 2.487500000 GHz Frequency #Avg Type: RMS Avg Hold: 20/20 Trig: Free Run Atten: 20 dB PNO: Fast ----IFGain:Low Auto Tune Mkr3 2.483 650 GHz -59.124 dBm Ref Offset 4.65 dB Ref 13.65 dBm Center Freq 2.487500000 GHz L1 -22.11 c Start Freq 2.475000000 GHz 3 Stop Freq 2.50000000 GHz Stop 2.50000 GHz Sweep 2.400 ms (1001 pts) tart 2.47500 GHz Res BW 100 kHz CF Step 2.500000 MHz #VBW 300 kHz Ma Auto (Δ) Freq Offset 0 Hz Scale Type .og Lin π/4-DQPSK Hopping Band edge-right side Frequency #Avg Type: RMS Avg|Hold: 10/10 TYPE NNNN Center Freq 2.487500000 GHz PNO: Fast -+-IFGain:Low Trig: Free Run Atten: 20 dB Auto Tune Mkr3 2.498 900 GHz -54.026 dBm Ref Offset 4.65 dB Ref 13.65 dBm Center Freq 2 487500000 GHz Start Freq 2.475000000 GHz man 2 Stop Freq 2.50000000 GHz Start 2.47500 GHz #Res BW 100 kHz Stop 2.50000 GHz Sweep 2.400 ms (1001 pts) CF Step 2.500000 MHz Man #VBW 300 kHz uto 2.475 875 GHz (Δ) 2.483 500 GHz 2.498 900 GHz -2.037 dB (Δ) 60.903 dB 54.026 dB Freq Offset 0 Hz Scale Type Lin og STATU

$\pi/4$ -DQPSK No-hopping Band edge-right side

Ke #Avg Type: RMS Avg|Hold: 20/20 Center Freq 2.357500000 GHz PRO: Fast Frequency Trig: Free Run Atten: 16 dB Auto Tune Mkr3 2.399 965 GH: -50.915 dBn Ref Offset 5 dB Ref 10.00 dBm Center Freq 2.357500000 GHz Start Freq 2.31000000 GHz 3 Stop Freq 2.405000000 GHz Stop 2.40500 GHz Sweep 9.133 ms (1001 pts) Start 2.31000 GHz #Res BW 100 kHz CF Step 9.500000 MHz #VBW 300 kHz Ma Auto (Δ) Freq Offset 0 Hz Scale Type .og Lin 8-DPSK Hopping Band edge-left side Center Freq 2.357500000 GHz PN0: Fast IFGain:Low Frequency #Avg Type: RMS Avg|Hold: 10/10 Trig: Free Run Atten: 20 dB NPI DEI Mkr3 2.399 965 GHz -51.947 dBm Auto Tune Ref Offset 5 dB Ref 14.00 dBm **Center Freq** 2.357500000 GHz 柳 Start Freq 2.310000000 GHz Martin and M Stop Freq 2.40500000 GH Start 2.31000 GHz #Res BW 100 kHz Stop 2.40500 GHz Sweep 9.133 ms (1001 pts) CF Step 9.500000 MHz #VBW 300 kHz Auto Ma (Δ) 51.947 dE Freq Offset 0 Hz Scale Type og Lin

8-DPSK No-hopping Band edge-left side



8-DPSK No-hopping Band edge-right side

Page 98 of 114 http://www.ncttesting.cn

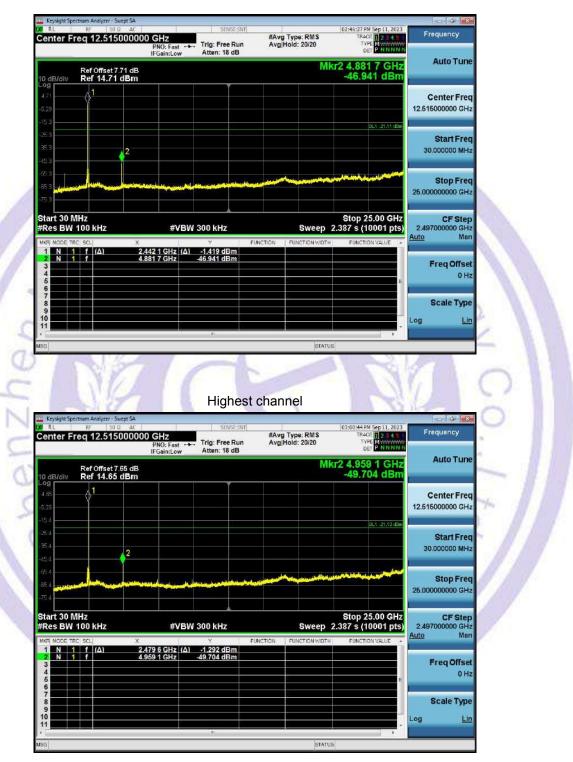


Right earphone

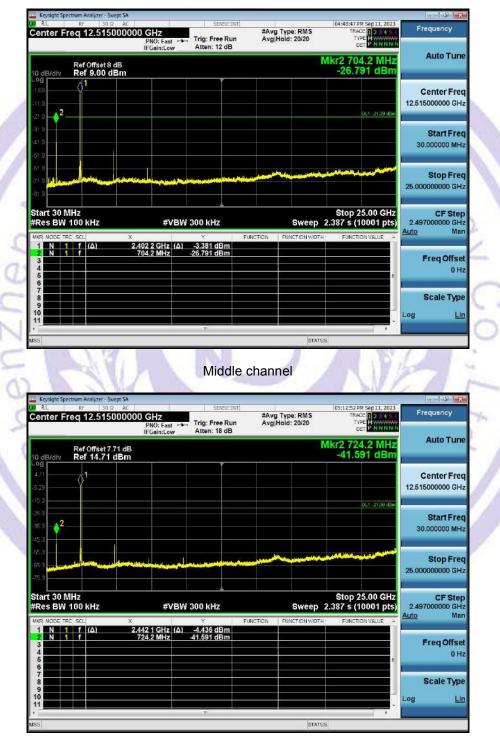
GFSK mode:



NCT Technology



π /4-DQPSK mode:

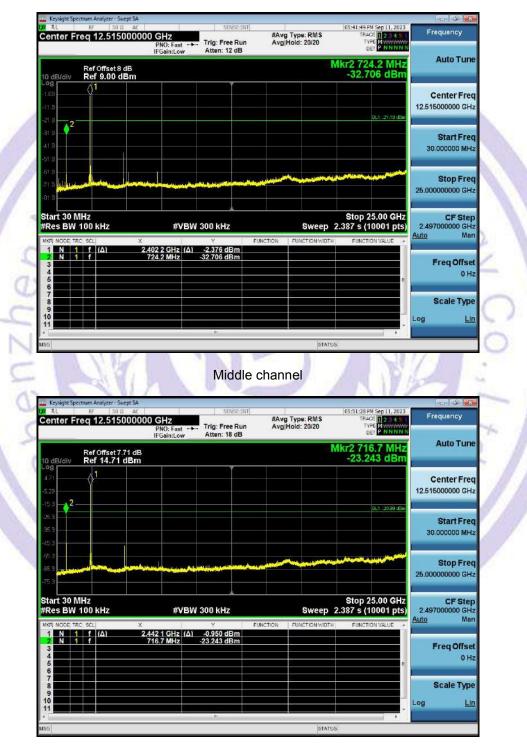


Lowest channel



Highest channel

9-DPSK mode:



Lowest channel



Highest channel

Ke Center Freq 2.357500000 GHz PRO: Fast Frequency #Avg Type: RMS Avg Hold: 20/20 Trig: Free Run Atten: 12 dB Auto Tune Mkr3 2.399 870 GHz -54.070 dBm Ref Offset 8 dB Ref 9.00 dBm Center Freq 2.357500000 GHz Start Freq 2.31000000 GHz de. Stop Freq 2.405000000 GHz Stop 2.40500 GHz Sweep 9.133 ms (1001 pts) Start 2.31000 GHz #Res BW 100 kHz CF Step 9.500000 MHz #VBW 300 kHz Ma Auto (Δ) Freq Offset 0 Hz Scale Type .og Lin GFSK Hopping Band edge-left side Key BI Sep 11, 2023 Center Freq 2.357500000 GHz Frequency #Avg Type: RMS Avg Hold: 10/10 Trig: Free Run Atten: 18 dB Auto Tune Mkr3 2.399 870 GHz -50.185 dBm Ref Offset 8 dB Ref 15.00 dBm Center Freq 2.357500000 GHz Start Fred 2.310000000 GHz นองการสมุทร์สุดที่สุดที Stop Freq 2.40500000 GH Start 2.31000 GHz #Res BW 100 kHz Stop 2.40500 GHz Sweep 9.133 ms (1001 pts) CF Step 9.500000 MHz #VBW 300 kHz Auto Ma 51.24 2.400 000 G Freq Offset 50.185 dB 0 Hz Scale Type .og Lin

GFSK No-hopping Band edge-left side

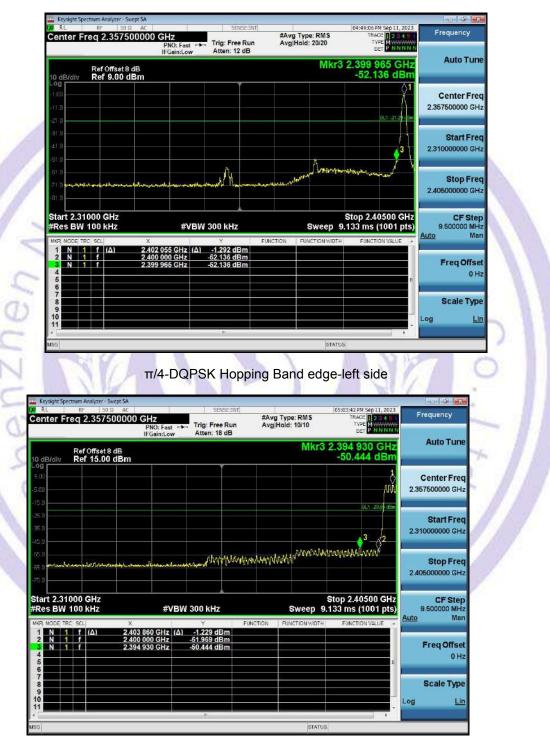
Report No.: NCT23035006E

enzhe,



Ke Frequency #Avg Type: RMS Avg Hold: 20/20 Auto Tune Mkr3 2.497 850 GH: -56.282 dBn Ref Offset 7.65 dB Ref 14.65 dBm Center Freq 2.487500000 GHz Start Freq 2.475000000 GHz 13 ∆² Stop Freq 2.50000000 GHz Stop 2.50000 GHz Sweep 2.400 ms (1001 pts) Start 2.47500 GHz #Res BW 100 kHz CF Step 2.500000 MHz #VBW 300 kHz Mar Auto (Δ) Freq Offset 0 Hz Scale Type .og GFSK Hopping Band edge-right side Sep 11, 2023 Center Freq 2.487500000 GHz PNO: Fast Frequency #Avg Type: RMS Avg Hold: 10/10 Trig: Free Run Atten: 18 dB Auto Tune Mkr3 2.496 875 GHz -50.048 dBm Ref Offset 7.65 dB Ref 14.65 dBm **Center Freq** 2.487500000 GHz Start Freq 2.475000000 GHz mOB mmm Stop Freq 2.50000000 GHz Start 2.47500 GHz #Res BW 100 kHz Stop 2.50000 GHz Sweep 2.400 ms (1001 pts) CF Step 2.500000 MHz #VBW 300 kHz Auto Ma (Δ) Freq Offset 2 496 875 dE 0 Hz Scale Type .og Lin

GFSK No-hopping Band edge-right side



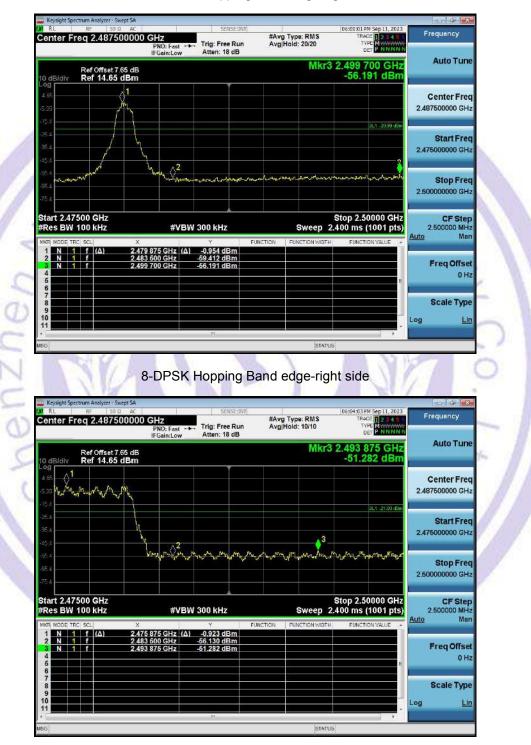
π /4-DQPSK No-hopping Band edge-left side

Ke Frequency Center Freq 2.487500000 GHz #Avg Type: RMS Avg Hold: 20/20 Trig: Free Run Atten: 18 dB PNO: Fast ----IFGain:Low Auto Tune Mkr3 2.499 650 GHz -55.984 dBm Ref Offset 7.65 dB Ref 14.65 dBm Center Freq 2.487500000 GHz L1 21.01 c Start Freq 2.475000000 GHz 02 Stop Freq 2.50000000 GHz Stop 2.50000 GHz Sweep 2.400 ms (1001 pts) Start 2.47500 GHz #Res BW 100 kHz CF Step 2.500000 MHz #VBW 300 kHz Ma Auto (Δ) Freq Offset 0 Hz Scale Type .og Lin π/4-DQPSK Hopping Band edge-right side :39:05 PM Sep 11, 2023 Frequency #Avg Type: RMS Avg|Hold: 10/10 TYPE M Center Freq 2.487500000 GHz PNO: Fast ----IFGain:Low Trig: Free Run Atten: 18 dB Auto Tune Mkr3 2.492 025 GHz -50.710 dBm Ref Offset 7.65 dB Ref 14.65 dBm Center Freq 2 487500000 GHz Start Freq 2.475000000 GHz δ^2_{μ} Stop Freq 2.50000000 GHz Start 2.47500 GHz #Res BW 100 kHz Stop 2.50000 GHz Sweep 2.400 ms (1001 pts) CF Step 2.500000 MHz #VBW 300 kHz Ma uto 2.479 875 GHz (Δ) 2.483 500 GHz 2.492 025 GHz -0.918 dBm -56.688 dBm -50.710 dBm (Δ) Freq Offset 0 Hz Scale Type Lin og STATU

$\pi/4$ -DQPSK No-hopping Band edge-right side

Ke #Avg Type: RMS Avg|Hold: 20/20 Center Freq 2.357500000 GHz PRO: Fast Frequency Trig: Free Run Atten: 12 dB Auto Tune Mkr3 2.399 870 GHz -55.237 dBm Ref Offset 8 dB Ref 9.00 dBm Center Freq 2.357500000 GHz Start Freq 2.31000000 GHz 1. A Stop Freq 2.405000000 GHz Stop 2.40500 GHz Sweep 9.133 ms (1001 pts) Start 2.31000 GHz #Res BW 100 kHz CF Step 9.500000 MHz #VBW 300 kHz Ma Auto (Δ) Freq Offset 0 Hz Scale Type .og Lin 8-DPSK Hopping Band edge-left side Sep 11, 2023 Center Freq 2.357500000 GHz PNO: Fast IFGain:Low Frequency #Avg Type: RMS Avg|Hold: 10/10 Trig: Free Run Atten: 18 dB Auto Tune Mkr3 2.392 175 GHz -51.076 dBm Ref Offset 8 dB Ref 15.00 dBm Center Freq 2.357500000 GHz Start Freq 2.31000000 GHz and when Marin and Taken and Manager Stop Freq 2.40500000 GH Start 2.31000 GHz #Res BW 100 kHz Stop 2.40500 GHz Sweep 9.133 ms (1001 pts) CF Step 9.500000 MHz #VBW 300 kHz luto Ma 2.401 865 GHz 2.400 000 GHz 2.392 175 GHz Freq Offset -51.076 dBm 0 Hz Scale Type .og Lin

8-DPSK No-hopping Band edge-left side



8-DPSK No-hopping Band edge-right side

Page 110 of 114 http://www.ncttesting.cn

14 Antenna Requirement

14.1 Test Standard and Requirement

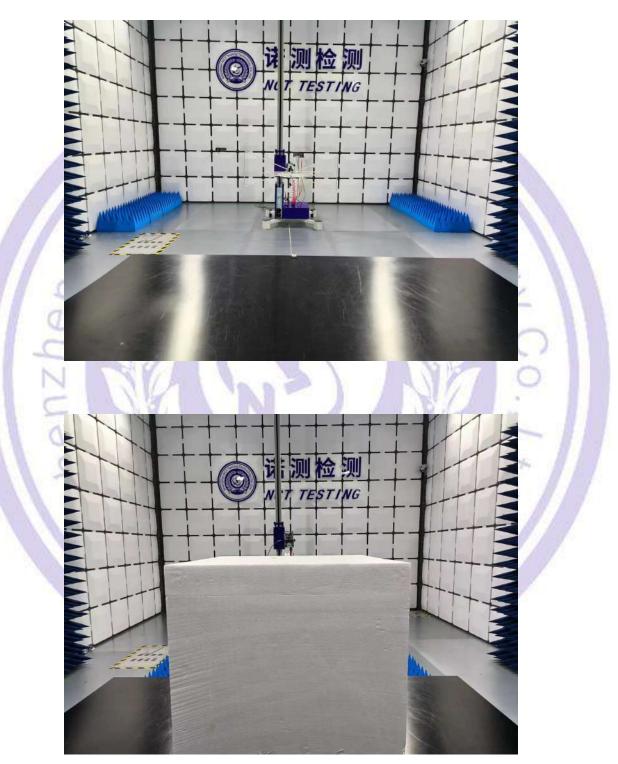
Test Standard	FCC Part15 Section 15.203 /247(c)
Requirement	 1) 15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
	2) 15.247(c) (1)(i) requirement:
	Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

14.2 Antenna Connected Construction

The antenna is Chip Antenna which permanently attached, and the Max. gain of the antenna is 1.5 dBi. It complies with the standard requirement.



15 APPENDIX I -- TEST SETUP PHOTOGRAPH







16 APPENDIX II -- EUT PHOTOGRAPH

Please see the attachment for details.

